

OWNER'S GUIDE

ASSEMBLY • OPERATION • MAINTENANCE • PARTS

21" ELECTRIC START ROTARY MOWER

Model Number
121-838E000

➡ IMPORTANT

The battery pack is shipped in a partially charged state and must be charged 16 hours prior to initial use. Follow charging instructions on page 12.

Important: Read Safety Rules and Instructions Carefully



WARNING: This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 360900, Cleveland, Ohio 44136.

IMPORTANT

RULES FOR SAFE OPERATION



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE YOUR LAWN MOWER. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL—



HEED ITS WARNING.



DANGER:

Your lawn mower was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. If you violate any of these rules, you may cause serious injury to yourself or others.



TRAINING

1. Read this owner's guide carefully in its entirety before attempting to assemble or operate this machine. Be completely familiar with the controls and the proper use of this machine before operating it. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Your rotary mower is a precision piece of power equipment, not a plaything. Therefore, exercise extreme caution at all times. Your unit has been designed to perform one job: to mow grass. Do not use it for any other purpose.
3. Never allow children under 14 years old to operate a power mower. Children 14 years old and over should only operate mower under close parental supervision. Only persons well acquainted with these rules of safe operation should be allowed to use your mower.
4. Keep the area of operation clear of all persons, particularly small children and pets. Stop engine when they are in the vicinity of your mower to help prevent blade contact or throw object injury. Although the area of operation should be completely cleared of foreign objects, an object may have been overlooked and could be accidentally thrown by the mower in any direction and cause serious personal injury to the operator or any others allowed in the area.



PREPARATION

1. Thoroughly inspect the area where the equipment is to be used. Remove all stones, sticks, wire, bones and other foreign objects which could be picked up and thrown by the mower in any direction and cause serious personal injury to the operator or any others allowed in the area. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders and the like.
2. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair, to protect eyes from foreign objects that may be thrown from the machine in any direction.
3. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Shirts and pants that cover the arms and legs and steel-toed shoes are recommended. Do not wear loose fitting clothes or jewelry. They can be caught in moving parts. Never operate a unit in bare feet, sandals, or sneakers.
4. Before working with gasoline, extinguish all cigarettes, cigars, pipes and other sources of ignition. Check the fuel level before starting the engine. Gasoline is an extremely flammable fuel. Do not fill the gasoline tank indoors, while the engine is running, or until engine has been allowed to cool for at least two minutes after running. Replace gasoline cap securely and wipe off any spilled gasoline before starting the engine as it may cause a fire or explosion.
5. Disengage the self-propelled mechanism or drive clutch on units so equipped before starting the engine.
6. The blade control handle is a safety device. Never attempt to bypass its operation. Doing so makes the safety device inoperative and may result in personal injury through contact with the rotating blade. The blade control handle must operate easily in both directions and automatically return to the disengaged position when released.
7. Never attempt to make a wheel or cutting height adjustment while the engine is running.
8. Never operate the mower in wet grass. Always be sure of your footing. A slip and fall can cause serious personal injury. Keep a firm hold on the handle and walk, never run. Mow only in daylight or in good artificial light.

9. For your safety, use the slope gauge included as part of this manual to measure slopes before operating this unit on a sloped or hilly area. If the slope is greater than 15° as shown on the slope gauge, do not operate this unit on that area or serious injury could result.



OPERATION

1. Do not change the engine governor settings or overspeed the engine. Excessive engine speeds are dangerous.
2. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times as the rotating blade can cause injury.
3. Stop the blade when crossing gravel drives, walks or roads.
4. After striking a foreign object, stop the engine, remove the wire from the spark plug, and thoroughly inspect the mower for any damage. Repair the damage before restarting and operating the mower.
5. If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
6. Shut the engine off and wait until the blade comes to a complete stop before removing the grass catcher or unclogging the chute. The cutting blade continues to rotate for a few seconds after the engine is shut off. Never place any part of the body in the blade area until you are sure the blade has stopped rotating.
7. Before cleaning, repairing or inspecting, make certain the blade and all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the spark plug to prevent accidental starting.
8. Do not run the engine indoors.
9. Never cut grass by pulling mower toward you. Mow across the face of slopes, never up-and-down. Exercise extreme caution when changing direction on slopes. Do not mow excessively steep slopes. Always be sure of your footing. A slip and fall can cause serious personal injury.
10. Never operate mower without proper guards, plates or other safety protective devices in place.
11. Muffler and engine become hot and can cause a burn. Do not touch.
12. Do not operate this mower with the chute door open, unless the complete grass catcher or chute deflector is properly mounted on the mower.



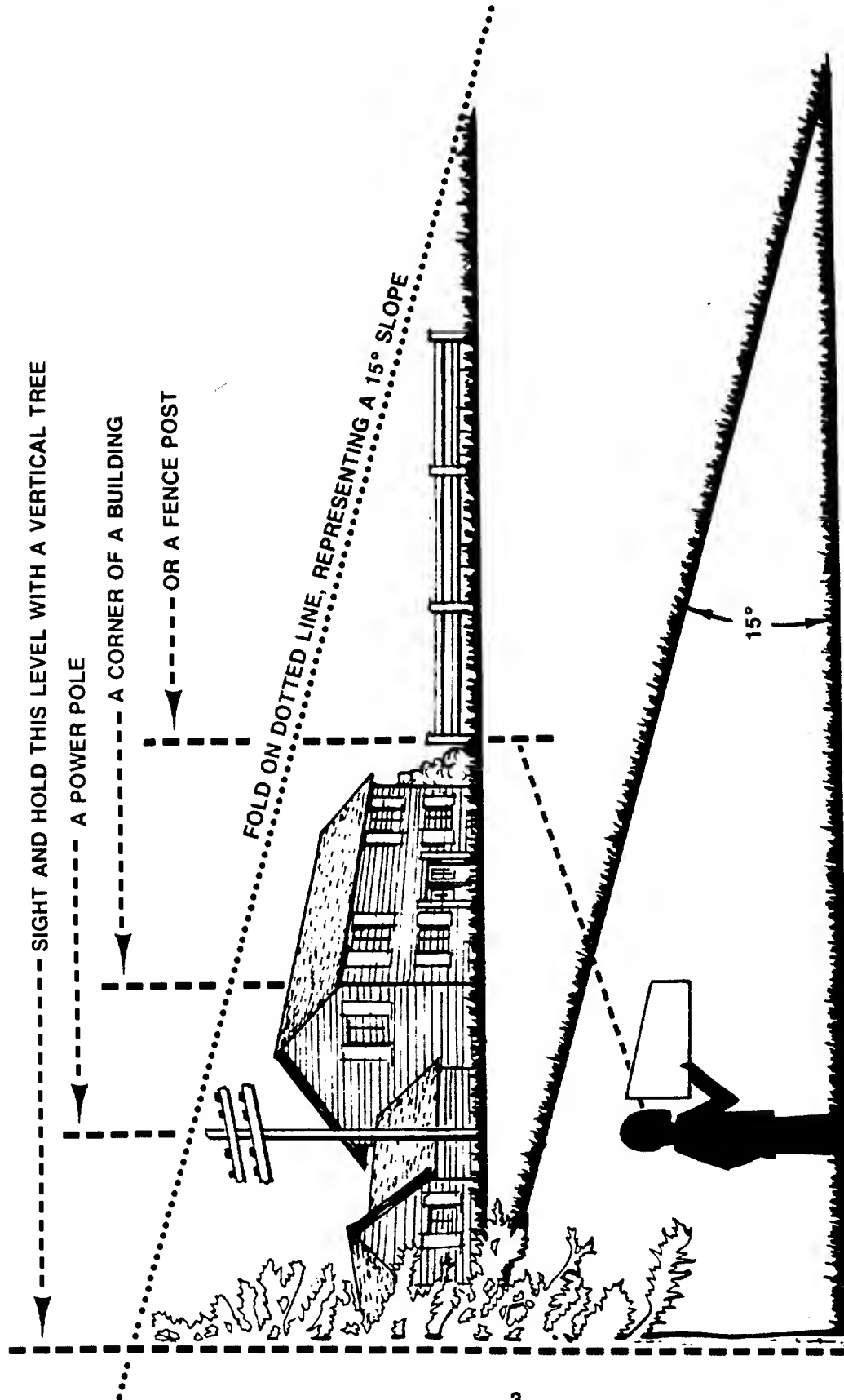
MAINTENANCE AND STORAGE

1. Check the blade and engine mounting bolts at frequent intervals for proper tightness. Also visually inspect blade for damage (e.g. bent, cracked). Replace with blade which meets original equipment specifications.
2. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
3. Never store the mower with gasoline in the tank or gas containers inside of a building where fumes may reach an open flame or spark (e.g. gas hot water heater). Allow the engine to cool before storing in any enclosure.
4. To reduce fire hazard, keep the engine free of grass, leaves and excessive oil.
5. Check the grass catcher bag frequently for wear or deterioration. Replace a worn or damaged bag immediately. For safety protection, replace only with new bag meeting original equipment specifications.

SLOPE GAUGE

(Keep this sheet in a safe place for future reference.)

USE THIS SHEET AS A GUIDE TO DETERMINE SLOPES WHERE YOU MAY NOT OPERATE SAFELY.



Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2½ feet every 10 feet). A riding mower could overturn and cause serious injury. If operating a walk-behind mower on such a slope, it is extremely difficult to maintain your footing and you could slip, resulting in serious injury.

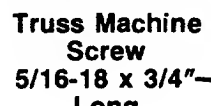
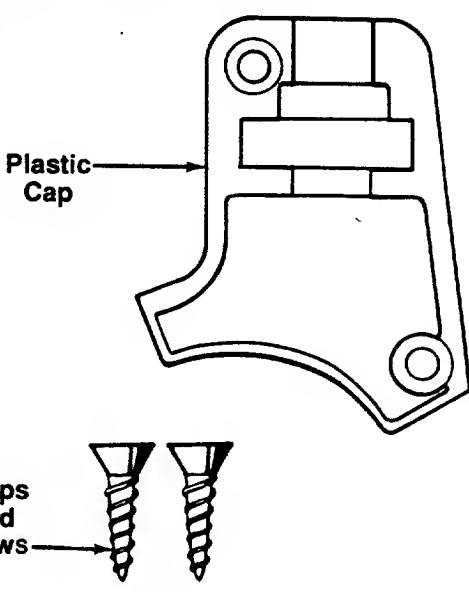

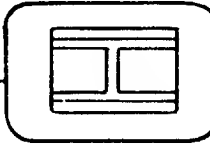
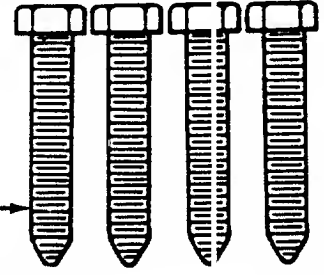
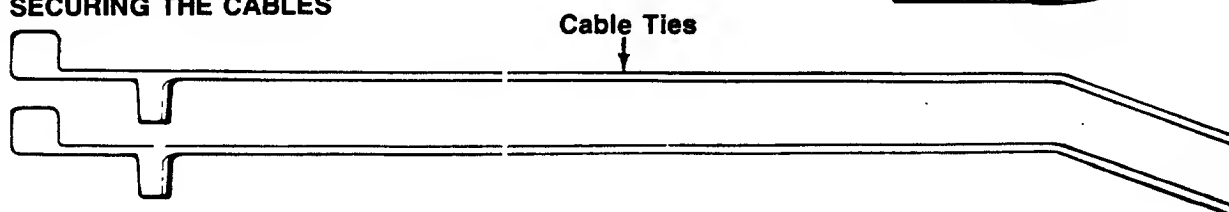
Operate RIDING mowers up and down slopes, never across the face of slopes.

Operate WALK-BEHIND mowers across the face of slopes, never up and down slopes.

CONTENTS OF HARDWARE PACK

Remove this sheet from your owner's manual and lay the hardware on the illustration for identification purposes. After assembly, keep the Slope Gauge which is on the reverse side of this sheet for future use.

(Hardware pack may contain extra items which are not used on your unit.)

<p>A ATTACHING THE LOWER HANDLE</p>  <p>Truss Machine Screw 5/16-18 x 3/4\" Long</p> <p>Split Washer 5/16\" I.D.</p> <p>Hex Nut 5/16-18 Thread</p>	<p>E ATTACHING THE DRIVE CLUTCH CONTROL CABLE</p>  <p>Plastic Cap</p> <p>Phillips Head Screws</p>
<p>B ATTACHING THE UPPER HANDLE</p>  <p>Curved Head Bolts</p> <p>Split Washers 5/16\" I.D.</p> <p>Hex Nuts 5/16-18 Thread</p>	<p>F FINAL ASSEMBLY</p>  <p>Plastic Plug (If Required)</p>
<p>C GRASS CATCHER ASSEMBLY</p>  <p>Self-Tapping Screws 1 1/4\" Long</p>	 <p>Cable Ties</p> <p>Cable Clamp</p>
<p>D SECURING THE CABLES</p>	



ASSEMBLY INSTRUCTIONS

IMPORTANT: This unit is shipped **WITHOUT GASOLINE or OIL**. After assembly, service engine with gasoline and oil as instructed in the separate engine manual packed with your unit.

NOTE: Reference to right or left hand side of the mower is observed from the operating position.

Tools Required for Assembly

- (1) Phillips Head Screwdriver
- (1) 1/2" Wrench*
- (1) 7/16" Wrench*
- (1) Flat Blade Screwdriver
- *Or one 6" Adjustable Wrench.

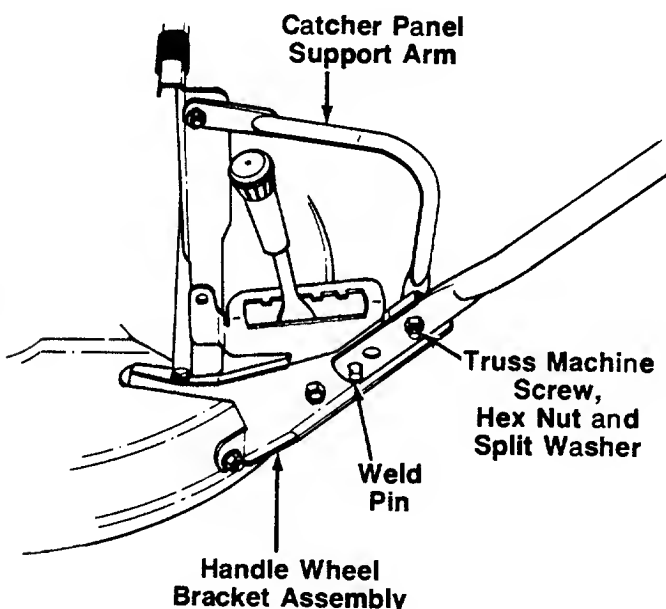


FIGURE 1.

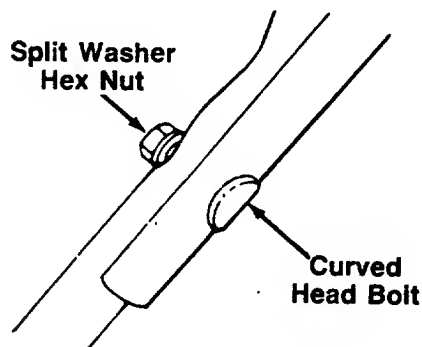


FIGURE 2.

UNPACKING

1. Remove the lawn mower from the carton by opening the top flaps and lifting the unit out. Be careful of the staples. Make certain all parts and literature have been removed from the carton before the carton is discarded.
2. Disconnect and ground the spark plug wire. Check beneath the deck for any cardboard packaging. Remove if present.
3. Stretch out all control cables and place on the floor. Be careful not to bend or kink the cables at any time during assembly.
4. Remove page four from this manual and lay the contents of the hardware pack on the illustration for identification.

ATTACHING THE LOWER HANDLE (Hardware A)

1. For shipping purposes your mower is set with the wheels in the lowest cutting height position. Raise the mower to the highest setting for assembly of lower handle.
2. On the left side of the mower, remove the truss machine screw, hex nut and split washer from the handle wheel bracket assembly as shown in figure 1.
3. Attach the lower handle by placing the bottom holes in the lower handle over the weld pins on the handle wheel bracket assemblies.
4. Pivot catcher panel support arm in position as shown in figure 1. Insert truss machine screw through catcher panel support arm, wheel bracket assembly and handle. Secure using the split washer and hex nut removed in step 2. Tighten securely.
5. Secure the right side of the handle to handle wheel bracket assembly using truss machine screw, 5/16" split washer and hex nut. Tighten securely.

ATTACHING THE UPPER HANDLE (Hardware B)

1. Place the upper handle in position over the lower handle. The label on the throttle control housing and the control lever must be facing up.
2. Secure the upper and lower handle using the curved head bolts, split washers and hex nuts as shown in figure 2.

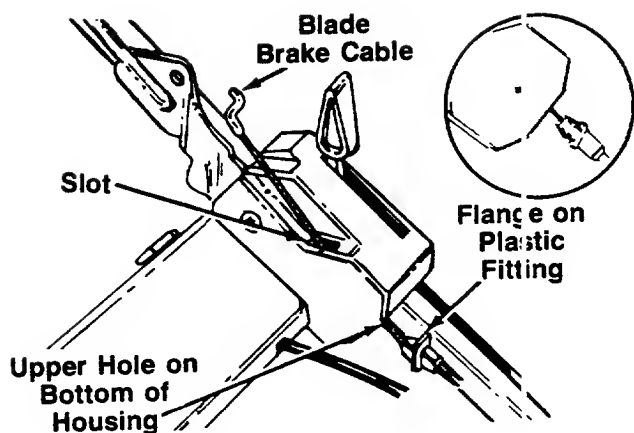


FIGURE 3.

ATTACHING THE BRAKE CABLE

1. The brake cable is attached to the engine, and has a "Z" fitting on the loose end. Route the brake cable in back of the engine, to the outside of the height adjustment handle and handle mounting bracket, and below the lower handle. Place end of cable into the upper hole on the bottom of the control housing, and through the slot as shown. The angle of the plastic flange must be positioned downward as shown in figure 3. Be careful not to bend or kink the cable at any time.
2. Push the plastic fitting until it locks into the control housing.



WARNING: Brake cable must be assembled as shown for proper blade brake operation.

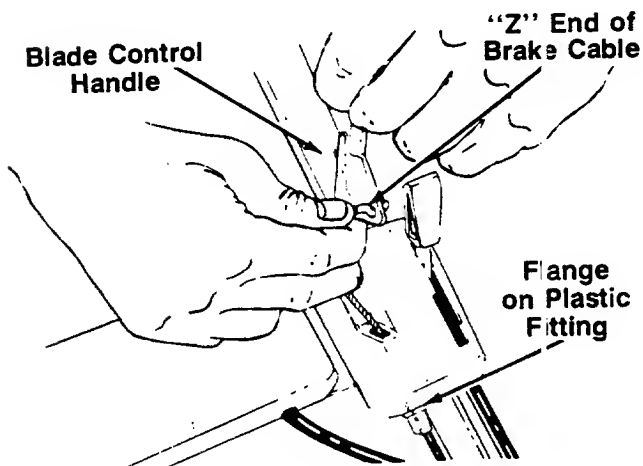


FIGURE 4.

3. Hook the "Z" end of the brake cable into the hole in the blade control handle from the inside to the outside as shown in figure 4.

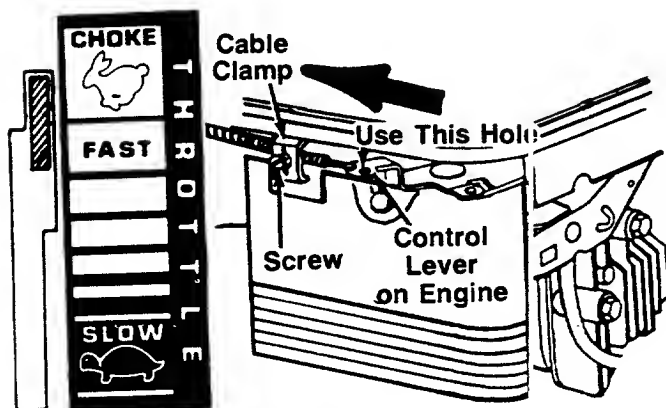


FIGURE 5.

ATTACHING THE THROTTLE CABLE

1. Push the throttle control lever on the handle all the way forward to CHOKE position. See figure 5.
2. The throttle control cable is attached to the upper handle. Route the throttle control cable under the lower handle. Route the cable to the outside of the handle wheel bracket assembly and height adjustment lever then in back of the engine. Hook the "Z" end of the throttle control cable into the hole in the control lever on the engine shown in figure 5.
3. Using a screwdriver, remove the screw and cable clamp shown in figure 5.
4. Push the control lever on the engine as far toward the rear of the engine as it will go. Secure the cable in this position with the cable clamp and screw.

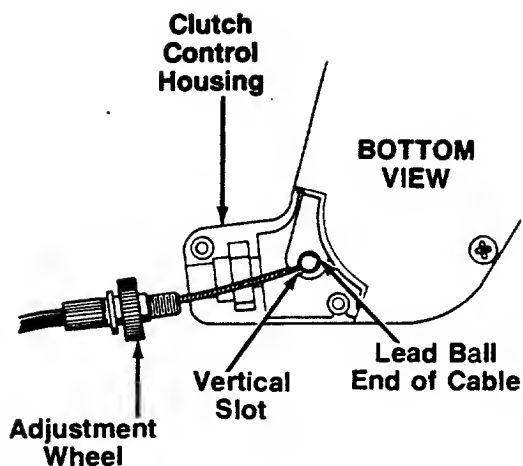


FIGURE 6.

ATTACHING THE DRIVE CLUTCH CONTROL CABLE (Hardware E)

The drive clutch control cable is attached to the deck. Attach the cable to the lever in the clutch control housing, located in the middle of the upper handle, as follows.

1. Place the lead ball end of the cable into the fitting provided in the end of the clutch control lever. Slip the braided wire into the vertical slot as shown in figure 6.

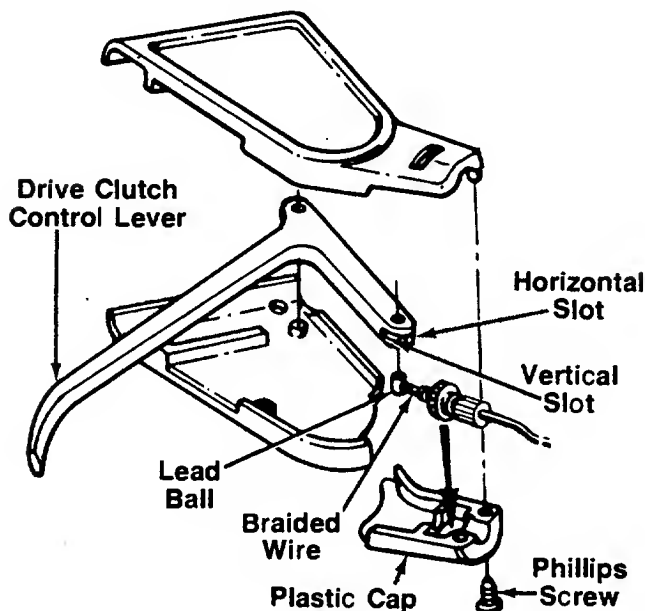


FIGURE 7.

2. Slide the braided wire around in the horizontal slot. See figure 7.

3. Make certain the adjustment wheel is threaded onto the cable as far as possible as shown in figure 7. Place the adjustment wheel into the clutch control housing.

4. Secure the plastic cap to the clutch control housing using the two Phillips head screws. See figure 7.



WARNING: Drive clutch adjustment must be checked before the unit is operated, as described in the operation section.

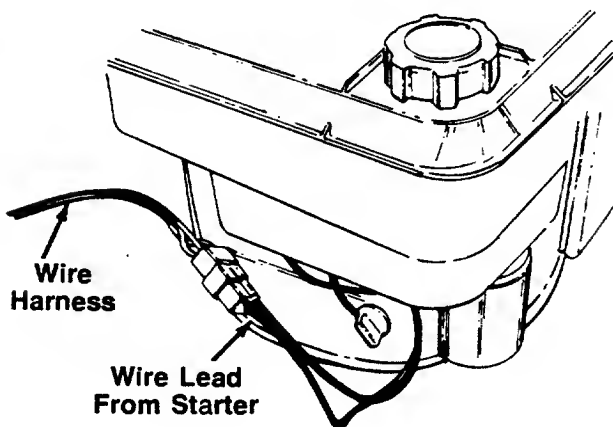


FIGURE 8.

ATTACHING THE WIRE HARNESS

1. Remove the wing nuts that secure the rear discharge chute assembly to the deck. Lift up on the two bottom corners of the rear discharge chute assembly, and slide it off the deck.
2. Plug the end of the wire lead coming from the starter on the engine into the plug on the end of the wire harness. See figure 8.

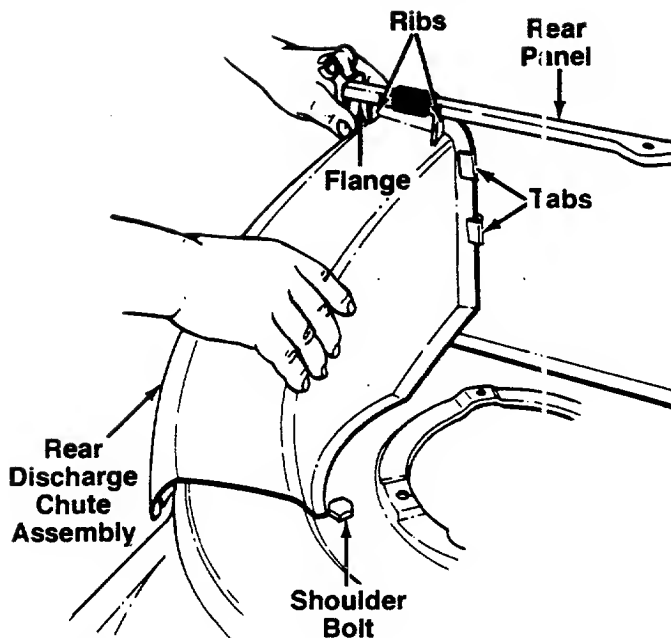


FIGURE 9.



WARNING: Never operate your unit without either the side chute deflector or entire rear discharge chute and grass catcher assembly in place.

3. Replace the rear discharge chute assembly as follows.

Slide the ribs on the discharge chute assembly under the flange on rear panel as you insert the side of the discharge chute under the two tabs. See figure 9.

The edge of the discharge chute assembly goes under the shoulder bolt on deck. Push down on the chute assembly, and slide the bottom corner slots over the bolts on side of deck.

Press down on the discharge chute assembly and secure with wing nuts. Make certain wing nuts are seated properly.

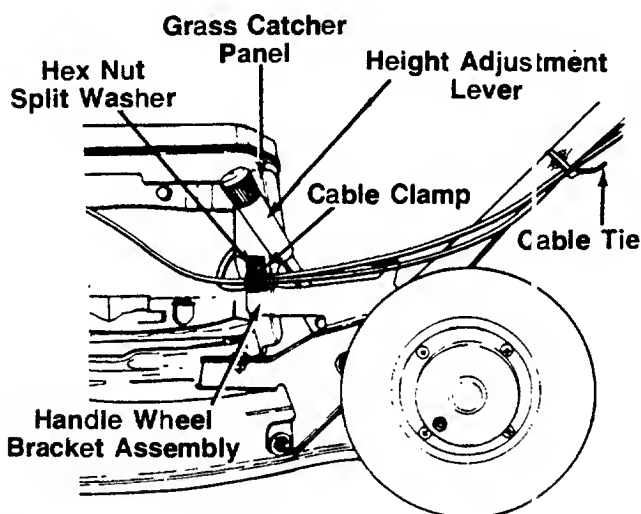


FIGURE 10.

SECURING THE CABLES (Hardware D)

Attach the brake and throttle control cables to the left handle wheel bracket assembly as follows, using the cable clamp provided.

1. Open the clamp and slip the cables inside.
2. Remove the hex nut and split washer from the side of the left handle wheel bracket assembly as shown in figure 10. Attach the cable clamp to the left hand wheel bracket assembly as shown. Secure with hardware just removed.
3. Place the height adjustment lever in the lowest position.

Secure all the control cables to the left side of the handle with the cable ties as follows, taking the slack out of the cables so they do not contact the wheel.

1. Insert posts on cable ties into holes provided on the lower handle, one near the top and one near the bottom of lower handle. The holes may be on either the inside or outside of the handle. See figure 11A.
2. Secure the cables with the cable ties. See figure 11B.
3. Trim excess ends of cable ties.

FINAL ASSEMBLY OF MOWER (Hardware F)

1. If plastic plug is needed and is not already assembled, insert plastic plug into hole in the top rear of the deck by slipping one end of plug into hole, then pressing down on the other end of plug. Use a soft hammer if necessary.
2. Assemble the front hub caps by lining up the tab on the hub caps with the holes in the front wheels. Push to lock in position.

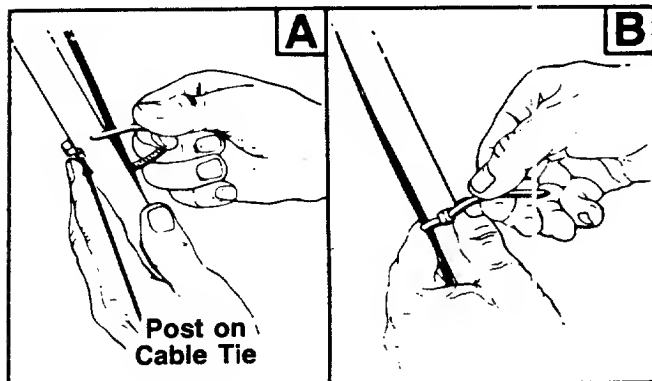


FIGURE 11.

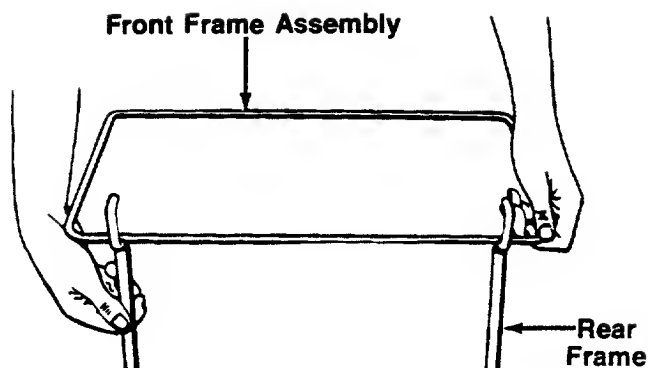


FIGURE 12.

3. Make certain **all** nuts and bolts are tightened securely.
4. **Be certain to charge the battery** as instructed in "Before Starting" section under Operation. Read instructions carefully.

GRASS CATCHER ASSEMBLY (Hardware C)

1. Join the rear frame and front frame assembly as shown in figure 12.

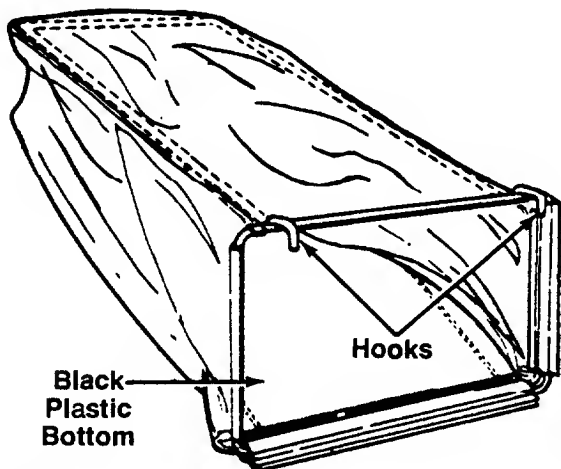


FIGURE 13.

NOTE: Make certain the grass bag is turned right side out before assembling (warning label will be on the outside).

2. Place the frame inside the grass catcher bag. The bottom of the grass bag is black plastic. The hooks on the front frame go toward the top of the bag. See figure 13.

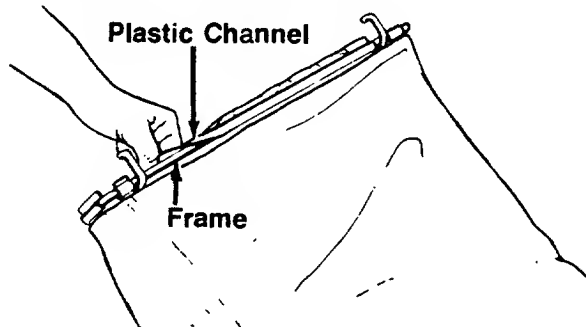


FIGURE 14.

3. Secure front of bag to frame by working the plastic channels on bag over frame. See figure 14.

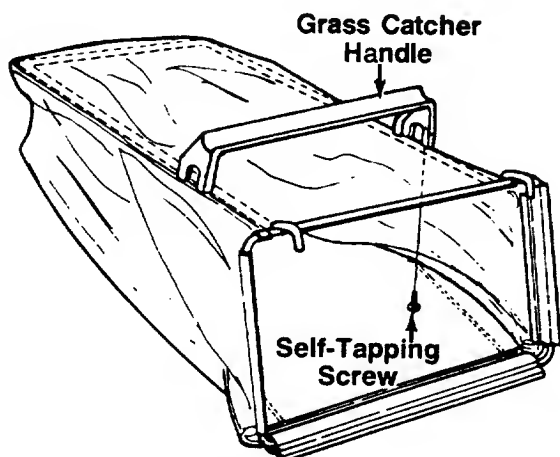


FIGURE 15.

4. Place the grass catcher handle in position on top of the grass bag and frame as shown in figure 15. Secure with four self-tapping screws.

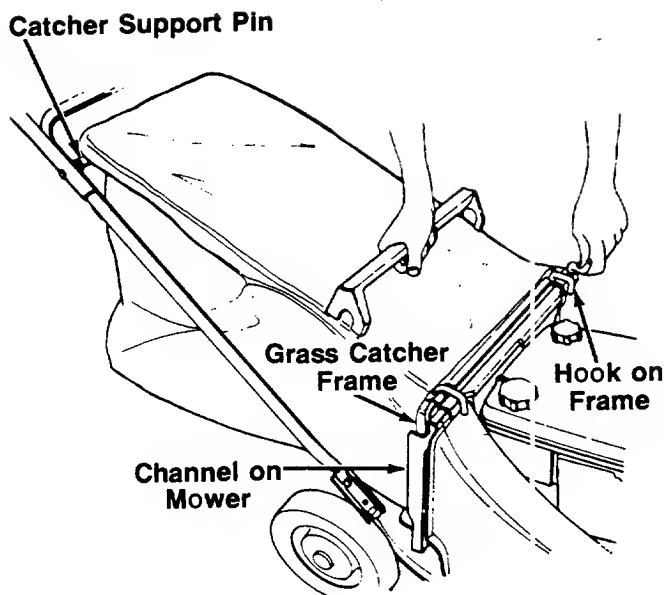


FIGURE 16.

TO ATTACH BAG TO MOWER

1. Hold the chute door on the catcher panel open as shown in figure 16.
2. Slide the frame of the grass catcher down into the channels on each side of the mower. The hooks on the frame go over the panel on the discharge chute. See figure 16.

To remove the grass catcher, lift the grass catcher straight up.

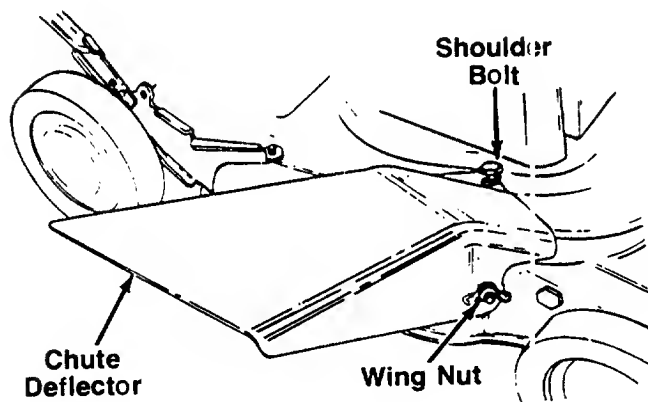


FIGURE 17.

TO CONVERT MOWER TO SIDE DISCHARGE

To convert your mower to a side discharge unit, proceed as follows.

1. Remove the rear discharge chute assembly by removing two wing nuts. Lift up on the two bottom corners of the discharge chute assembly, and slide it off the deck.
2. Attach the side chute deflector by first placing it over the rear bolt in the side of the deck. Then slide the notch in the top of the deflector around the shoulder bolt on top of the deck. Slide the notch in the side of the deflector around the front bolt in the side of the deck. See figure 17.

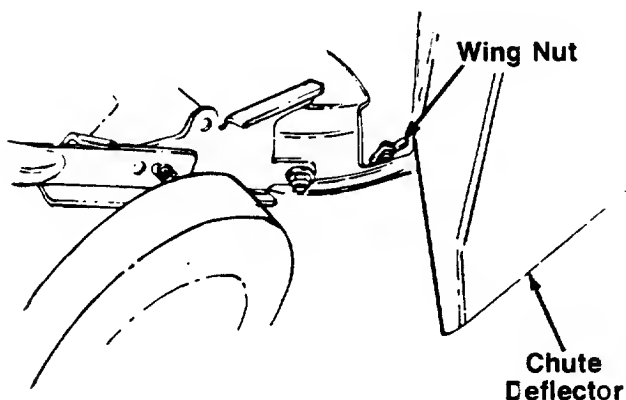


FIGURE 18.

3. Secure the front of the chute deflector to the bolt on the side of the deck with one wing nut. See figure 18. Secure the back of the chute deflector in the same manner. See figure 18.

CONTROLS

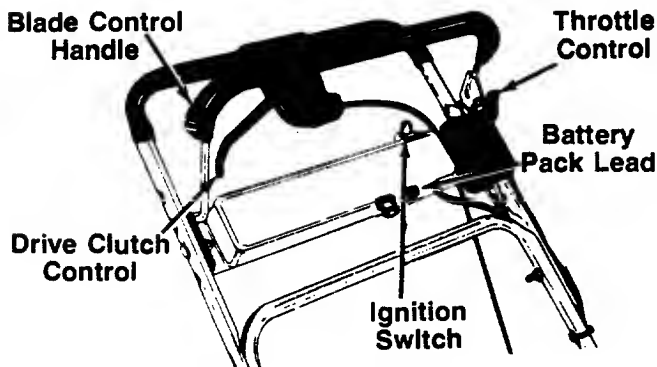


FIGURE 19.

BLADE CONTROL HANDLE

WARNING
THIS CONTROL MECHANISM IS A
SAFETY DEVICE NEVER ATTEMPT
TO BYPASS ITS OPERATIONS

The blade control handle is located on the upper handle of the mower. See figure 19. The blade control handle must be depressed in order to operate the unit. Release the blade control handle to stop the engine and blade.



WARNING: The blade will be rotating whenever the engine is running.

THROTTLE CONTROL

The throttle control is located on the left side of the upper handle. It is used to regulate the engine speed.



WARNING: The throttle control cannot be used to stop the engine.

IGNITION SWITCH

The ignition switch is located on the left side of handle panel. It is used for starting only. See figure 19.

DRIVE CLUTCH CONTROL

Squeezing the drive clutch control engages the drive mechanism to the rear wheels. Releasing the clutch control stops the rear wheels from driving. Release the drive clutch control to slow down when negotiating an obstacle, making a turn or stopping. See figure 19.

OPERATION



FIGURE 20.

Keep hands and feet away from the chute area on cutting deck. See figure 20.

The operation of any lawn mower can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields. We recommend wide vision safety mask for over spectacles or standard safety glasses.



NOTE: For best results raise the cutting position until it is determined which height is best for your lawn. See cutting height adjustment section.

GAS AND OIL FILL-UP

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your mower. Read instructions carefully.



WARNING: Never fill fuel tank indoors, with engine running or until the engine has been allowed to cool for at least two minutes after running.

BEFORE STARTING



WARNING: The battery contains corrosive fluid and toxic material. **HANDLE WITH CARE.** Keep away from children. Do not puncture, disassemble, mutilate or incinerate. Explosive gases could be vented during charging or discharging. Use in a well-ventilated area, away from sources of ignition.

1. Charge battery for 16 hours before initial use. DO NOT CHARGE LONGER THAN 20 HOURS.

IMPORTANT: Use only the battery charger supplied with this mower.

To charge the battery, first remove the protective cap from the end of the battery pack lead. Always plug charger lead into battery pack lead before inserting battery charger plug into 120 volt standard household outlet.

After charging, disconnect battery charger plug from household outlet first, then disconnect charger lead from battery pack lead.

2. Before each use, check for proper drive clutch operation by performing the following before starting the engine:

With the drive clutch control released, push mower forward. It should move freely. Pull mower backward. It should move freely.

If it does not and the rear wheels tend to lock up, the clutch may not be releasing completely. Do not start the engine until corrections have been made. Check the control cable for severe bend, kinks and binding, or grass build-up in the pulley groove. Correct and adjust as required. Refer to adjustment section for additional information.

3. Attach spark plug wire to spark plug. Make certain the metal loop on the end of the spark plug wire (inside the rubber boot) is fastened securely over the metal tip on the spark plug. See figure 21.

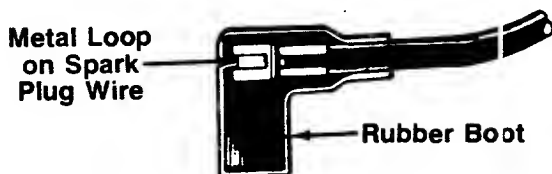


FIGURE 21.

TO START ENGINE AND ENGAGE BLADE



WARNING: When starting the unit for the first time, face the mower against a solid object such as a wall, fence, etc. Start the unit, and if it shows any signs of motion with the drive clutch control disengaged, shut the engine off immediately. Make certain the drive clutch control is adjusted so the drive belt is as loose as possible. Refer to the Adjustment Section.

1. Move the throttle control lever to CHOKE position. (A warm engine may not require choking.)
2. Standing behind the unit, depress the blade control handle and hold it against the upper handle. Be certain drive clutch control handle is released.
3. Turn the ignition key to the right to start the engine. Release the key after engine starts.
4. After engine starts, move throttle control to FAST or desired engine speed.

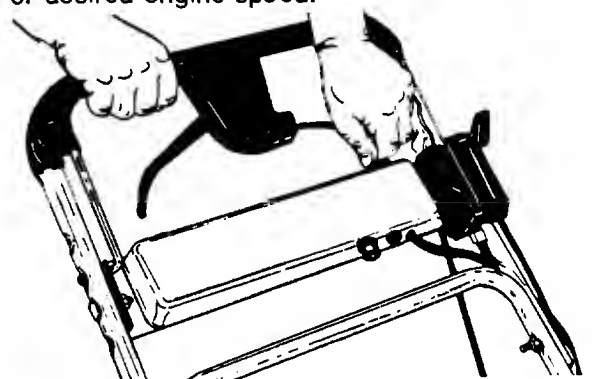


FIGURE 22.

NOTE: The engine on your unit is provided with an auxiliary recoil starter system. To start the engine using the auxiliary starter system, proceed as follows.

A. Depress the blade control handle and hold it against the upper handle.

B. Grasp the recoil starter handle, slowly pull the rope out from the engine about two feet and hold rope in this position.

C. Step behind the handle into the operating position. With the blade control handle still depressed, pull recoil starter handle using a quick, firm motion. Repeat until engine starts. After engine starts, return rope slowly to the engine.

NOTE: If any problems are encountered, refer to the Trouble Shooting Guide on page 22.



WARNING: Never operate your unit without either the side chute deflector or entire rear discharge chute and grass catcher assembly in place.

TO STOP ENGINE AND BLADE

1. Release the blade control handle to stop the engine and blade.



WARNING: The blade continues to rotate for a few seconds after the engine is shut off.

2. Disconnect the spark plug wire and ground it against the engine to prevent accidental starting while equipment is unattended.

USING YOUR ROTARY MOWER

Be sure that lawn is clear of stones, sticks, wire, or other objects which could damage lawn mower or engine. Such objects could be accidentally thrown by the mower in any direction and cause serious personal injury to the operator and others.

For the best results, do not cut wet grass because it tends to stick to the underside of the mower, preventing proper discharge of grass clippings, and could cause you to slip and fall. New grass, thick grass or wet grass may require a narrower cut. Blade speed should be adjusted to the condition of the lawn.

When using the side discharge mower, the best mowing pattern is one that allows the clippings to discharge towards the uncut part of the lawn. This permits re-cutting of the clippings to further pulverize them. When cutting high weeds, discharge towards cut portion, then recut at right angles to first direction.

For best results, cut off one-third or less of the total length of the grass. Lawn should be cut in the fall as long as there is growth.

This mower is designed to be operated at full throttle to give you the best cut and do the most effective job of bagging the cut grass.



WARNING: If you strike a foreign object, stop the engine. Remove wire from spark plug, thoroughly inspect the mower for any damage, and repair the damage before restarting and operating the mower. Extensive vibration of the mower during operation is an indication of damage. The unit should be promptly inspected and repaired.

ADJUSTMENTS



WARNING: Do not at any time make any adjustment to lawn mower without first stopping engine and disconnecting spark plug wire.

DRIVE CLUTCH CONTROL ADJUSTMENT

Use the adjustment wheel located in the clutch control housing to tighten the drive belt if mower does not self-propel with the drive clutch control engaged, or if drive belt is slipping (unit hesitates while engine maintains the same speed). See figure 23.

In addition, the adjustment wheel may also be used to determine the position in which the drive clutch control is engaged. If it is more comfortable to have the drive engaged with the lever further away from the handle, tighten the drive belt.

Make certain to retest the unit for neutral as instructed in the Operation Section. Move the adjustment wheel in the opposite direction to loosen the drive belt if necessary.

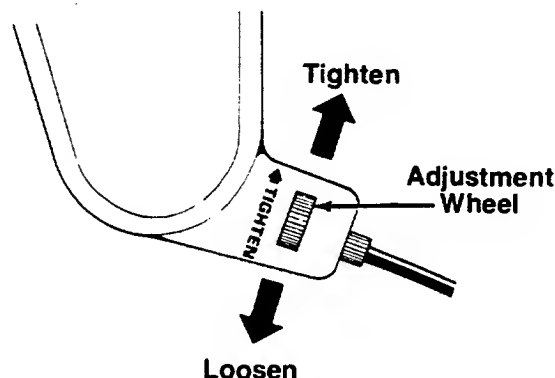


FIGURE 23.

CUTTING HEIGHT ADJUSTMENT

The height adjustment handle is located on the left side of the deck. The handle may be placed in one of nine cutting height positions. Push the handle to the left and then either forward to lower the cutting height or backward to raise the cutting height. See figure 24.

For rough or uneven lawns, move the height adjustment handle to a position which will give a higher cutting height.

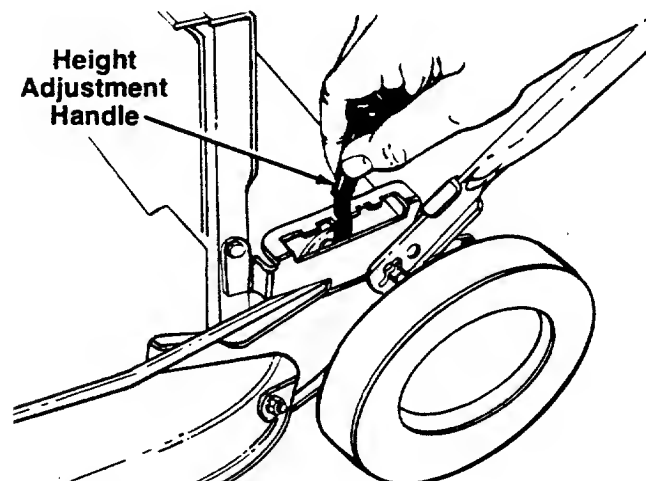


FIGURE 24.

THROTTLE

The throttle control wire assembly can be adjusted if necessary. Remove the screw and cable clamp shown in figure 5. Remove the cable from the clamp. Adjust as instructed in step 4 of "Attaching the Throttle Control Cable" in Assembly Instructions.

LUBRICATION



WARNING: Always stop engine and disconnect spark plug wire before cleaning, lubricating or doing any kind of work on lawn mower.

Blade Control—Lubricate the pivot points on the blade control handle and the brake cable at least once a season with light oil. See figure 25. The blade control must operate freely in both directions.

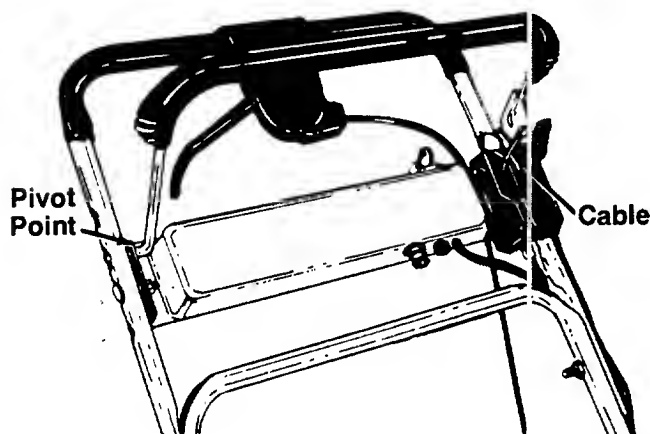


FIGURE 25.

Wheels—Lubricate the wheel bearings at least once a season with light oil. Also, if the wheels are removed for any reason, lubricate the surface of the axle bolt and the inner surface of the wheel with light oil. A 4 oz. plastic bottle of light oil lubricant is available. Order part number 737-0170. Engine oil may also be used.

Engine—Follow engine section for lubrication instructions.

Throttle—Periodically lubricate throttle control lever and throttle wire assembly with a few drops of light oil for ease of operation.

Transmission—The transmission is pre-lubricated and sealed at the factory. It does not require checking. If disassembled for any reason, fill with 2 ounces of Alvania grease, part number 737-0168.

MAINTENANCE



WARNING: Be sure to disconnect and ground the spark plug wire before performing any repairs or maintenance.

NOTE: When tipping the unit, empty the fuel tank and keep engine spark plug side up.

TROUBLE SHOOTING

Refer to page 22 of this manual for trouble shooting information.

BATTERY PACK REPLACEMENT

Remove the battery pack from the handle panel for replacement only. Do not separate the batteries for any reason. Dispose of batteries properly.



WARNING: Batteries contain sulfuric acid which may cause burns. Do not short circuit or mutilate in any way. Do not put batteries in fire. They may burst or release toxic materials.

When replacing battery pack in handle panel, battery pack must be positioned with the positive terminal to the right hand side and the negative terminal to the left hand side of panel. See figure 26. Replacing the battery pack incorrectly will cause serious damage.

The positive lead on the wire harness has the small connector. Connect the positive lead to the positive side of the battery pack, then connect the negative side.

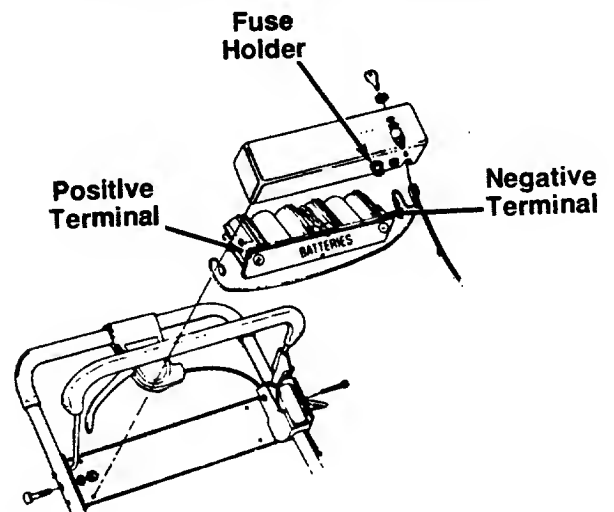


FIGURE 26.

IN-LINE FUSE

The unit is equipped with an in-line fuse. If unit fails to start, check the fuse in the wiring harness by turning the end of the fuse holder and removing from battery cover. See figure 26. Replace with standard automotive 7½ amp fuse.

CUTTING BLADE

When removing the cutting blade for sharpening or replacement, protect hands by using heavy gloves or a rag to grasp the cutting blade. Remove the bolt and bell washer which hold the blade and adapter to the engine crankshaft. Remove the blade and adapter from the crankshaft.

If the blade or blade adapter needs replacing, remove the two small bolts, lock washers and nuts which hold the blade to the adapter.



WARNING: Periodically inspect the blade adapter for cracks, especially if you strike a foreign object. Replace when necessary.

When sharpening the blade, follow the original angle of grind as a guide. It is **extremely important** that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade. An unbalanced blade will cause excessive vibration when rotating at high speeds, may cause damage to the mower and could break, causing personal injury.

It is recommended that the blade always be removed from the adapter for the best test of balance. The blade can be tested by balancing it on a round shaft screwdriver. Remove metal from the heavy side until it balances evenly.

Before reassembling the blade and the blade adapter to the unit, lubricate the engine crankshaft and the inner surface of the blade adapter with light oil. Lubricating the bolt holes, bolts and inner surface of the nuts with light oil is also recommended. A 4 oz. plastic bottle of light oil lubricant is available. Order part number 737-0170. Engine oil may also be used.

When replacing the blade, be sure to install the blade with the side of the blade marked "Bottom" (or with part number) facing the ground when the mower is in the operating position.

Blade Mounting Torque

Center Bolt and Blade Adapter Bolts: 375 in. lb. min., 450 in. lb. max.

To insure safe operation of your unit, **all** nuts and bolts must be checked periodically for correct tightness.

DECK

The underside of the mower deck should be cleaned after each use to prevent a buildup of grass clippings, leaves, dirt or other matter. If this debris is allowed to accumulate, it will invite rust and corrosion, and may cause an uneven discharge of grass clippings at the next cutting.

The deck may be cleaned by tilting the mower and scraping clean with a suitable tool (make certain the spark plug wire is disconnected).

ENGINE

Refer to the engine section of this manual for engine maintenance instructions.

STORAGE OF THE BATTERY

The battery must be stored with a full charge. A discharged battery will freeze.

IMPORTANT: All batteries discharge during storage.

Recharge battery every two months and before returning to service. Refer to charging instructions on page 12.

BELT REMOVAL AND REPLACEMENT

1. Disconnect the spark plug wire and ground it against the engine.
2. Drain the fuel tank or place a piece of plastic beneath the cap to prevent gasoline leakage.
3. Remove the grass bag, rear discharge chute assembly and catcher panel.
4. Remove the transmission belt cover by removing three bolts. See figure 28.
5. Tip the mower on its side, and block securely.

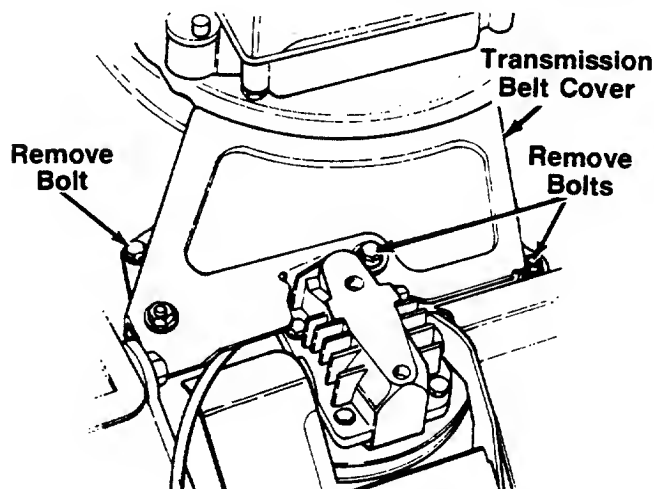


FIGURE 28.

6. Remove the center bolt which secures the blade to the crankshaft. See figure 29. Remove the blade, blade adapter and pulley half. Remove the belt.
7. Remove the inside belt guard by removing two self-tapping screws. A 3/8" wrench is required. See figure 29.

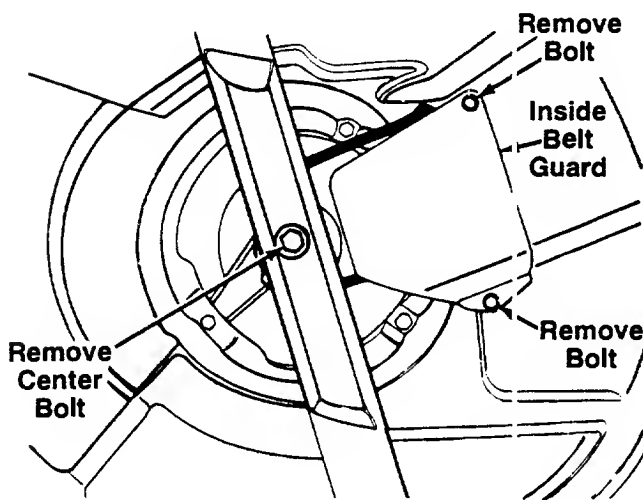


FIGURE 29.

8. Remove the belt from between the idler pulley and the belt guard on the idler pulley bracket. Refer to figure 31.
9. Remove the belt from the transmission pulley.
10. Assemble the new belt as follows.
 - A. Push the idler pulley up out of the way as shown in figure 30.
 - B. Slide the belt in from the rear of the deck, and place it around the transmission pulley. See figure 30.
 - C. Release the idler pulley so it falls down into position. Slide the belt in between the idler pulley and the belt guard on the idler pulley bracket as shown in figure 31.
 - D. Grease the crankshaft. Place belt between the two pulley halves, and reassemble the blade adapter and blade. Reassemble the inside belt guard.
 - E. Reassemble the transmission belt cover, following instructions in step 4 in reverse order.

NOTE: When reassembling the transmission belt cover, be certain the belt guard on the transmission cover is approximately 1/8" away from the belt. Make certain to tighten all nuts and bolts securely. If plastic was placed under the gas cap, be certain to remove it.

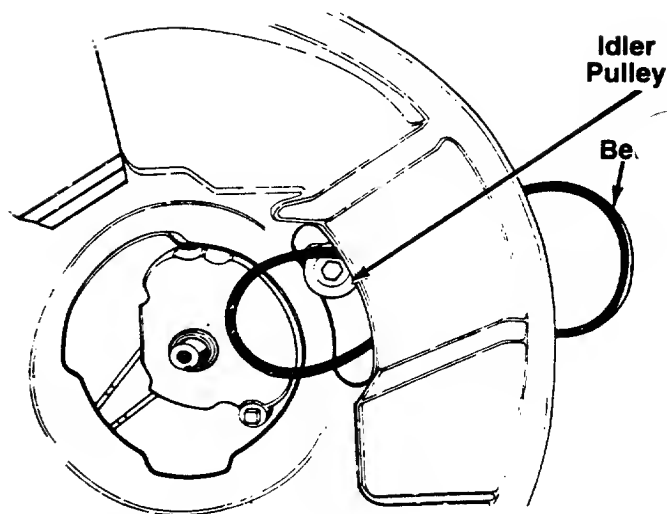


FIGURE 30.

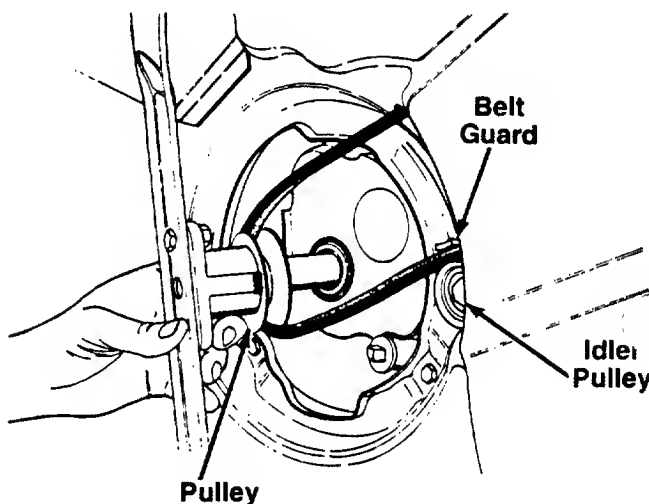


FIGURE 31.

OFF-SEASON STORAGE

The following steps should be taken to prepare lawn mower for storage.

1. Clean and lubricate mower thoroughly as described in the lubrication instructions.
2. Refer to engine section for correct engine storage instructions.
3. Coat mower's cutting blade with chassis grease to prevent rusting.
4. Store mower in a dry, clean area.

NOTE: When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rustproof the equipment. Using a light oil or silicone, coat the equipment, especially cables and all moving parts.

NOTE: The use of any accessory on this Rotary Mower other than those manufactured by the mower manufacturer is **not** recommended.

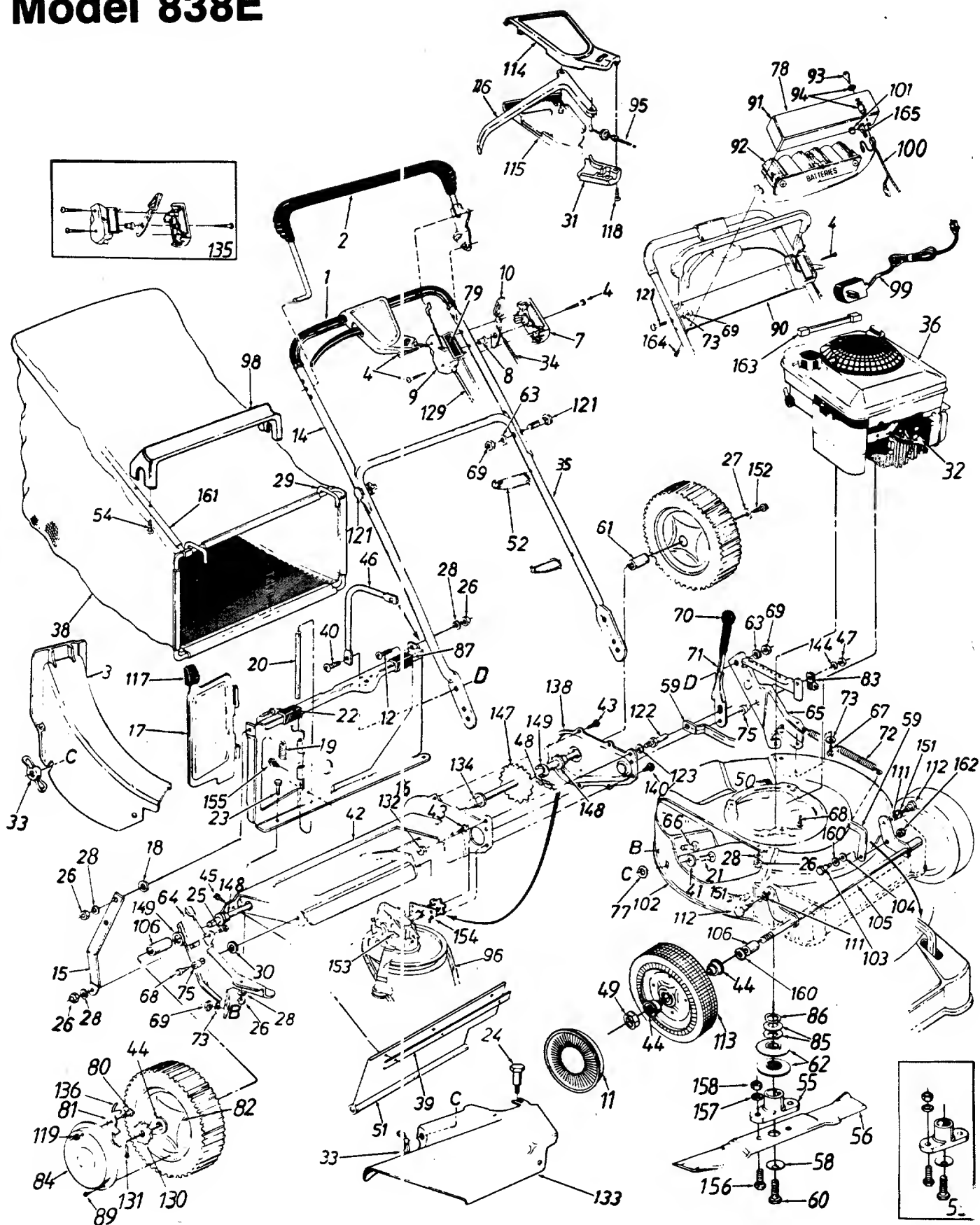


WARNING: To reduce the risk of injury, do not operate mower unless rear trailing shield and guard or entire grass catcher is in its proper place.

NOTE: Under normal usage bag material is subject to wear and should be checked periodically. Be sure any replacement bag complies with the mower manufacturer's recommendations.

For replacement bags, use only factory authorized replacement bag.

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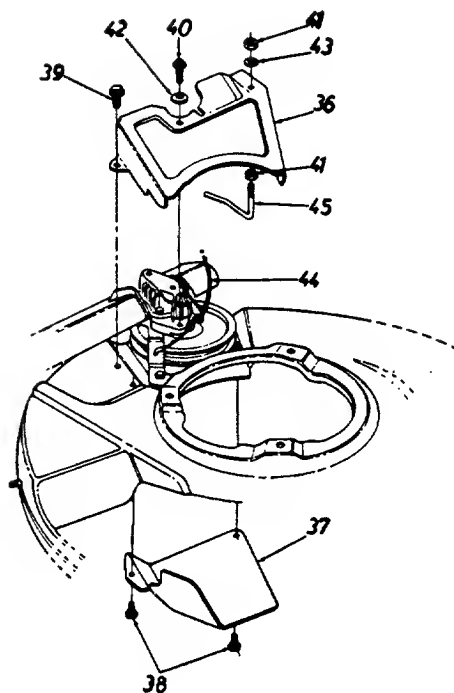
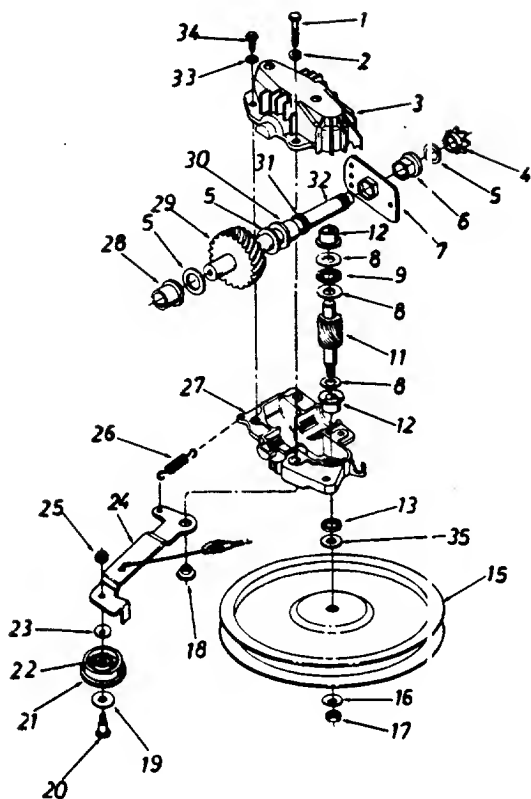


Model 838E

PARTS LIST FOR MODEL 838E ROTARY MOWER

REF. NO.	PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
1	720-0225		Foam Grip (2 Req'd.)	52	726-0240		Cable Tie
2	731-0609		Control Handle Ass'y. w/Plastic	54	710-1025		Hex AB-Tap Scr. #12 x 1.2"
	14321		Control Handle Ass'y. (Standard)	55	753-0485		Blade Adapter Kit
3	731-1023		Rear Discharge Chute Ass'y.	56	742-0306A		21" Blade
4	710-0796		Truss Mach. Scr. #12 x 1.50"	58	736-0453		Bell-Wash. .46" I.D.
			Lg.	59	16863		Height Adj. Connecting Arm
7	731-0817A		Control Panel Half	60	710-0757		Hex Bolt 7/16-20 x 1.5" Lg.
8	731-0524		Control Disc Pin				(Grade 5)
9	731-0816A		Clutch Panel Half	61	748-0190		Spacer .513" I.D. x .703" O.D.
10	731-0972		Throttle Control Lever				x .69" Lg.
11	731-0354		Hub Cap (Black)	62	756-0502		Serrated Pulley Half
	731-0355A		Hub Cap (Gray)	63	736-0119		L-Wash. 5/16" I.D.*
12	710-0946		Truss Mach. Scr. 1/4-20 x .62"	64	16136A		R.H. Handle Wheel Brkt. Ass'y.
14	749-0439B		Upper Handle	65	16137B		L.H. Handle Wheel Brkt. Ass'y.
15	16129		Panel Support Brkt.	66	710-0260		Carriage Bolt 5/16-18 x .62"*
16	16862A		Top Catcher Panel Ass'y.	67	710-0603		Hex Wash. Hd. B-Tap Scr.
17	17095A		Top Discharge Door				5/16-18
18	736-0211		FI-Wash. .285" I.D. x 1.25" O.D.	68	710-0654A		Hex Wash. Hd. TT-Tap Scr.
19	732-0483A		Torsion Spring				3/8-16
20	747-0514		Pivot Pin	69	712-0267		Hex Nut 5/16-18 Thd.*
21	710-0134		Carriage Bolt 1/4-20 x .62"*	70	720-0223		Grip
22	710-0225		Truss Mach. Scr. 1/4-20 x 3/4"	71	732-0606		Height Adj. Lever
			Lg.	72	732-0362		Extension Spring .75" O.D. x
23	710-0289		Hex Bolt 1/4-20 x .50" Lg.*				8" Lg.
24	738-0704		Shoulder Bolt .312 Dia. x	73	736-0242		Bell-Wash. 5/16" I.D.
			.18 Lg.—Special	75	750-0624		Shld. Spacer .500" Dia.
25	710-0258		Hex Bolt 1/4-20 x .62" Lg.*	77	726-0233		Bolt Retainer 1/4 x .50" O.D.
26	712-0287		Hex Nut 1/4-20 Thd.*	78	777-5902		Instruction Label
27	736-0270		Bell-Wash. 1/4" I.D.	79	777-5812		Control Label
28	736-0329		L-Wash. 1/4" I.D.*	80	738-0137		Shld. Scr. .342" Dia. x .268
29	747-0705		Front Grass Catcher Frame	81	748-0188B		Pawl
30	736-0258		FI-Wash. 3/8" I.D. x 1" O.D.	82	734-1412		Wheel Ass'y. Comp.
31	731-1059		S.P. Control Cover	83	726-0175		Clamp
32	735-0639		Spark Plug Insulator	84	10647		Hub Cap
33	712-0388		Wing Nut w/Washer	85	736-0450		Bell-Washer 1.01" I.D.
34	746-0674		Throttle Control Wire 58"	86	748-0332		Crankshaft Spacer
35	749-0725		Lower Handle	87	731-0880		Panel Clip
36	—		Engine	89	710-0748		Pan Hd. Tap Scr. #12
38	764-0257		21" Top Discharge Grass Bag—	90	16542B		Lower Battery Tray
			Black	91	731-0891A		Upper Battery Tray
	764-0256		21" Top Discharge Grass Bag—	92	725-1276		12 Volt Battery
			Gray	93	725-0201		Key
39	14835		Retaining Strip	94	725-0873		Key Switch
40	710-0323		Truss Mach. Scr. 5/16-18 x .75"	95	746-0710		S.P. Cable x 48" Lg.
41	736-0204		FI-Wash. .344" I.D. x .62"	96	754-0343		"V"-Belt
42	17055B		Chain—Axle Ass'y.	97	710-0969		Hex AB-Tap Scr. 1" Lg.
43	710-0352		Hex B-Tap Scr. 1/4" x .38" Lg.	98	731-0801		Bag Handle (Black)
44	741-0180		Flange Ball Bearing 1/2" I.D.	99	725-0727		Battery Charger
45	710-0776A		Hex AB-Tap Scr. 1/4 x .62"	100	725-1442		Wire Harness
46	749-0778		Catcher Panel Support Arm	101	725-1206		Plug
47	712-0296		Hex Patch L-Nut 3/8-24 Thd.	102	16859A		21" Deck Ass'y.
48	713-0353		#48 Chain .500" Pitch x	103	738-0234		Shld. Bolt .5" Dia. x .295
			30 Links	104	736-0253		Bell-Wash. .515" I.D. x 1.0"
49	712-0346		Hex L-Nut 1/2-20 Thd.	105	16856		Front Axle Ass'y.
50	731-0564		Plug	106	711-0313		Sleeve .526" I.D. x .690" O.D.
51	731-0672A		Rear Flap 3.75" x 17.30" Lg.				x .880" Lg.

Model 838E



PARTS LIST FOR MODEL 838E ROTARY MOWER

REF. NO.	PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
1	710-1062		Hex Bolt 1/4-20 x 1.25" w/Patch	24	17052A		Idler Brk't. Ass'y.†
2	736-0329		L-Wash. 1/4" I.D.*	25	712-0138		Hex Patch L-Nut 1/4-28 Thd.†
3	717-0418A		Upper Hsg. Half	26	732-0357		Extension Spring 1.12" Lg.†
4	713-0400		#48 Sprocket 7 Tooth x 1/2 Pitch	27	717-0419A		Lower Hsg. Half
5	736-0336		Fl-Wash. 5/8" I.D. x .1030	28	741-0415		Flange Bearing .566 Dia.
6	741-0413		Hex Flange Brg. .631" I.D.	29	717-0422		33 Tooth Helical Gear
7	16500A		Hex Bearing Cup	30	741-0414		Flange Bearing .629 Dia.
8	736-0314		Thrust Wash. .382" I.D. x .70" O.D.	31	721-0213		Oil Seal .625 Dia.
9	741-0479		Thrust Bearing	32	738-0607		Gear Sprocket Shaft
11	717-1216		11 Tooth Helical Gear	33	736-0722		L-Wash. #10 I.D.
12	748-0208A		Flange Bearing	34	710-0436		Hex B-Tap Scr. #10 x .62"
13	721-0212		Oil Seal	35	736-0410		Hex Washer .26" x .88"†
15	756-0330A		Fl-Pulley 5.06" I.D.†	36	17718		Transmission Belt Guard†
16	736-0270		Bell-Wash. .265" I.D. x .75"†	37	17064		Belt Cover
17	712-0351		Hex Nut 1/4-28 L.H. Thd.†	38	710-0352		Hex B-Tap Scr. 1/4 x .38" Lg.†
18	738-0440		Shld. Spacer .375" Dia. x .170"†	39	710-0599		Hex AB-Tap Scr. 1/4 x .50" Lg.†
19	736-0344		Fl-Wash. .390" I.D. x 1.0"†	40	710-0896		Hex B-Tap Scr. 1/4 x .62" Lg.
20	738-0826		Shld. Bolt .375" Dia. x .40"†	41	712-0287		Hex Nut 1/4-20 Thd.*†
21	756-0558		Fl-Idler Plastic 1.5" Dia.†	42	736-0270		Bell-Wash. .265" I.D. x .75"†
22	741-0556		Needle Brg. .375" x .31"†	43	736-0329		L-Wash. 1/4" I.D.*†
23	736-0270		Bell-Wash. .265" I.D.*†	44	746-0710A		S.P. Cable—48" Lg.†
				45	747-0549		S.P. Belt Guard†
				—	717-0417B		Transmission Comp.

†Not Part of Transmission Complete

Model 838E

PARTS LIST FOR MODEL 838E ROTARY MOWER (CONTINUED)

REF. NO.	PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
111	736-0221		Intern. L-Wash. 3/8 I.D.*	144	736-0300		FI-Wash. .385" I.D. x .87"
112	738-0705		Shld. Bolt .575" Dia. x .42	147	738-0719A		Rear Shaft Ass'y. 21.94" Lg.
113	734-1268		Wheel Ass'y. Comp.	148	741-0324		Hex Flange Bearing .506" I.D.
114	731-1057		Self-Propelled Control Cover				Plastic
115	731-1058		Self-Propelled Control Cover	149	736-0160		FI-Wash. .531" I.D. x .930"
116	731-0620		Control Lever	151	741-0491		Flanged Nylon Brg.
117	720-0190		Door Grip	152	710-0751		Hex Bolt 1/4-20 x .62" Lg.
118	710-0841		FI-"C"-Sunk Hd. Tap Scr. #10 x .75" Lg.	153	717-0417B		(Grade 5)
119	712-0324		Hex Ins. L-Nut 1/4-20 Thd.				Transmission Comp.
121	710-0671		Curved Carr. Bolt 5/16-18 x 1.38" Lg.	154	16500A		(See Breakdown)
122	711-0805		Shld. Pin 3/8-24 x 1.43" Lg.	155	710-0429		Hex Bearing Cup
123	736-0169		L-Wash. 3/8" I.D.	156	710-1055		Hex B-Tap Scr. #10 x .38
129	746-0480A		Control Cable 46" Lg.	157	736-0169		Hex Bolt
130	748-0318		Ratchet Wheel 1.62" O.D.	158	712-0241		L-Wash. 3/8" I.D.
131	714-0115		Cotter Pin 1/8" Dia. x 1.00" Lg.	160	736-0108		Hex Nut 3/8-24 Thd.
132	712-0711		Hex Jam Nut 3/8-24 Thd.	161	749-0764A		FI-Wash. .51" I.D. x .75" O.D.
133	731-0884		Side Chute Deflector Ass'y.	162	712-0266		Rear Catcher Frame
134	741-0522		Hex Flange Bearing	163	725-1538		Hex Jam Nut 3/8-18 Thd.
135	753-0430		Kit—Control Housing Comp.	164	710-0969		Extension Harness
136	10622B		Spring—Nylon	165	725-1428		Truss Mach. Tap Scr. 1" Lg.
138	17053A		Chain Cover		725-0298		Fuse Holder
140	710-0599		Hex Wash. S-Tap Scr. 1/4-20 x .50" Lg.				Fuse 7 1/2 Amp (Not Shown)

For faster service obtain standard nuts, bolts and washers locally. If these items cannot be obtained locally, order by part number and size as shown on parts list.

NOTE: The engine is not under warranty by the mower manufacturer... If repairs or service is needed on the engine, please contact your nearest authorized engine service outlet. Check the "Yellow Pages" of your telephone book under "Engines—Gasoline."



This instruction manual covers various models, and all specifications shown do not necessarily apply to your model. Specifications subject to change without notice or obligation.

TROUBLE SHOOTING GUIDE

Trouble	Possible Cause(s)	Corrective Action
Engine fails to start	<ol style="list-style-type: none"> 1. Blade control handle disengaged. 2. Spark plug wire disconnected. 3. Throttle control lever not in CHOKE position. 4. Fuel shut-off valve closed. (If so equipped) 5. Discharged battery. 6. Fuel tank empty, or stale fuel. 7. Blocked fuel line. 8. Faulty spark plug. 9. Engine flooded. 	<ol style="list-style-type: none"> 1. Engage blade control handle. 2. Connect wire to spark plug. 3. Move throttle lever to CHOKE position. 4. Open fuel shut-off valve.† 5. Charge battery or use auxiliary recoil starter as instructed in Operation section. 6. Fill tank with clean, fresh gasoline. 7. Clean fuel line. 8. Clean, adjust gap or replace. 9. Remove spark plug, dry the plug, and crank engine with plug removed and throttle in off position. Replace spark plug, connect wire and resume starting procedures.
Engine runs erratic	<ol style="list-style-type: none"> 1. Unit running in CHOKE position. 2. Spark plug wire loose. 3. Blocked fuel line or stale fuel. 4. Vent in gas cap plugged. 5. Water or dirt in fuel system. 6. Dirty air cleaner. 7. Carburetor out of adjustment. 	<ol style="list-style-type: none"> 1. Move throttle lever to FAST position. 2. Connect and tighten spark plug wire. 3. Clean fuel line; fill tank with clean, fresh gasoline. 4. Clear vent. 5. Drain fuel tank. Refill with fresh fuel. 6. Clean air cleaner.† 7. Adjust carburetor.†
Engine overheats	<ol style="list-style-type: none"> 1. Engine oil level low. 2. Air flow restricted. 3. Carburetor not adjusted properly. 	<ol style="list-style-type: none"> 1. Fill crankcase with proper oil. 2. Remove blower housing and clean.† 3. Adjust carburetor.†
Occasional skip (hesitates) at high speed	<ol style="list-style-type: none"> 1. Carburetor idle speed too slow. 2. Spark plug gap too close. 3. Carburetor idle mixture adjustment improperly set. 	<ol style="list-style-type: none"> 1. Adjust carburetor.† 2. Adjust gap to .030". 3. Adjust carburetor.†
Idles poorly	<ol style="list-style-type: none"> 1. Spark plug fouled, faulty or gap too wide. 2. Carburetor improperly adjusted. 3. Dirty air cleaner. 	<ol style="list-style-type: none"> 1. Reset gap to .030" or replace spark plug. 2. Adjust carburetor.† 3. Clean air cleaner.†
Excessive vibration	<ol style="list-style-type: none"> 1. Cutting blade loose or unbalanced. 2. Bent cutting blade. 	<ol style="list-style-type: none"> 1. Tighten blade and adapter. Balance blade. 2. Replace blade.
Mower will not discharge grass	<ol style="list-style-type: none"> 1. Engine speed too low. 2. Wet grass. 3. Excessively high grass. 	<ol style="list-style-type: none"> 1. Set throttle between 3/4 and full throttle. 2. Do not mow when grass is wet; wait until later to cut. 3. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath (1/2 width).
Uneven cut	Dull blade.	Sharpen or replace blade.

†Refer to separate engine manual packed with your unit.

Note: For repairs beyond the minor adjustments listed above, contact your local authorized service dealer.

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